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EXAMINER	
WANG, SHENGJUN	

ART UNIT	PAPER NUMBER
1617	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/007,657	CRANDALL ET AL.	
	Examiner	Art Unit	
	Shengjun Wang	1617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *July 20, 2004; September 3, 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,6,22,24-26,28 and 30-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,6,22,24-26,28 and 30-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3/23/04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Receipt of applicants' amendments and remarks submitted July 20, 2004 is acknowledged.

Double Patenting Rejection

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 2, 6, 8, 15 and 22, 24, 26-28, 31-34, 41-45 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-37 of U.S. Patent No. 5,639,794 (IDS A19) in view of Sotome (IDS A8), Tsuei et al (US 5,589,194) '794 claims a method of controlling the growth of pathological organisms on susceptible plant wherein the pathological organisms including fungi, insect, arachnoids. The said method comprising administering (contacting plant part or plant surface) to said plant a composition comprising cinnamic compounds, such as coniferyl aldehyde, cinnamic aldehyde and cinnamic alcohol. The composition may further comprise surfactant, the composition is free of other antioxidants. See, particularly the claims.

'794 does not teach expressly that the method may be used for increasing the plant's resistance to pathological microorganism or the employment of microencapsulated composition.

'794 also does not expressly teach that the said method will result in an increase of aromatic aldehyde or cinnamic acid in the treated plant.

2. Sotome teach that cinnamic aldehyde is known to be useful against soil borne pathogens, such as nematode or other plant microbial pathogens. See the abstract and examples 1, 3 and 4 in columns 5-10. Stability of cinnamic aldehyde is desired for maintaining the bioactivity. See, column 2, lines 26-33. Tsuei et al. teach that microencapsulation of bioactive agents, such as antimicrobial agent, with beeswax or carnuba wax is known to useful for controlled release or protection of the active agent from premature reaction. See, particularly, column 2, line 63 bridging column 3, lines 20, column 4, lines 8-15, column 4, line 53 bridging column 5, line 12.

3. Therefore, it would have been prima facie obvious to a person of ordinary skill in the art, at the time the claimed the invention was made, to employ the method in '224 for providing the plant with increased resistance to pathological microorganism or to further modify the method by employing beeswax microencapsulated cinnamic compounds.

A person of ordinary skill in the art would have been motivated to employ the method in '794 for providing the plant with increased resistance to pathological microorganism or to further modify the method by employing beeswax microencapsulated cinnamic compounds because cinnamic compounds are known to be similarly useful against pathogenic microorganism and beeswax microencapsulation of the cinnamic compounds are known to be useful for protection the compound from premature reaction and for controlled release. Since the steps in the methods the instant application and in '224 are substantially identical, the effect of the methods on the level of endogenous cinnamic compound in plant would have been reasonably expected to be identical.

Claims 43 and 44 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 5,676,958 (IDS A20) in view of Sotome (IDS A8), Tsuei et al (US 5,589,194). '958 claims a method of controlling pest population wherein the pest including arachinoids. The said method comprising contact the pest with a composition comprising cinnamic compounds, such as coniferyl aldehyde, cinnamic aldehyde and cinnamic alcohol. The composition may further comprise surfactant, the composition is free of other antioxidants. See, particularly the claims.

'794 does not teach expressly that the method may be used for increasing the plant's resistance to the pest or the employment of microencapsulated composition.

Sotome teach that cinnamic aldehyde is known to be useful against soil borne pathogens, such as nematode or other plant microbial pathogens. See the abstract and examples 1, 3 and 4 in columns 5-10. Stability of cinnamic aldehyde is desired for maintaining the bioactivity. See, column 2, lines 26-33. Tsuei et al. teach that microencapsulation of bioactive agents, such as antimicrobial agent, with beeswax or carnuba wax is known to useful for controlled release or protection of the active agent from premature reaction. See, particularly, column 2, line 63 bridging column 3, lines 20, column 4, lines 8-15, column 4, line 53 bridging column 5, line 12. 4. Therefore, it would have been prima facie obvious to a person of ordinary skill in the art, at the time the claimed the invention was made, to employ the method in '958 for providing the plant with increased resistance to pathological pest or to further modify the method by employing beeswax microencapsulated cinnamic compounds.

A person of ordinary skill in the art would have been motivated to employ the method in '794 for providing the plant with increased resistance to pathological pest or to further modify

the method by employing beeswax microencapsulated cinnamic compounds because cinnamic compounds are known to be similarly useful against pathogenic pest and beeswax microencapsulation of the cinnamic compounds are known to be useful for protection the compound from premature reaction and for controlled release.

Claims 2, 6, 8, 15 and 22, 24, 26-28, 31-34, 40-45 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2 and 7-12 of U.S. Patent No. 5,839,224 (IDS A22) in view of Sotome (IDS A8), Tsuei et al (US 5,589,194) '224 claims a method of providing a susceptible plant with increased resistance to an insect or arachnid. The said method comprising administering (contacting plant part or plant surface) to said plant a composition comprising cinnamic compounds, such as cinnamic acid, cinnamic aldehyde and cinnamic alcohol. The composition may further comprise surfactant. See, particularly claims 1-2, and 7-12.

'224 does not teach expressly that the method may be used for increasing the plant's resistance to pathological microorganism or the employment of microencapsulated composition. '224 also does not expressly teach that the said method will result in an increase of aromatic aldehyde or cinnamic acid in the treated plant.

5. Sotome teach that cinnamic aldehyde is known to be useful against soil borne pathogens, such as nematode or other plant microbial pathogens. See the abstract and examples 1, 3 and 4 in columns 5-10. Stability of cinnamic aldehyde is desired for maintaining the bioactivity. See, column 2, lines 26-33. Tsuei et al. teach that microencapsulation of bioactive agents, such as antimicrobial agent, with beeswax or carnuba wax is known to useful for controlled release or

protection of the active agent from premature reaction. See, particularly, column 2, line 63 bridging column 3, lines 20, column 4, lines 8-15, column 4, line 53 bridging column 5, line 12.

6. Therefore, it would have been prima facie obvious to a person of ordinary skill in the art, at the time the claimed the invention was made, to employ the method in '224 for providing the plant with increased resistance to pathological microorganism or to further modify the method by employing beeswax microencapsulated cinnamic compounds.

A person of ordinary skill in the art would have been motivated to employ the method in '224 for providing the plant with increased resistance to pathological microorganism or to further modify the method by employing beeswax microencapsulated cinnamic compounds because cinnamic compounds are known to be similarly useful against pathogenic microorganism and beeswax microencapsulation of the cinnamic compounds are known to be useful for protection the compound from premature reaction and for controlled release. Since the steps in the methods the instant application and in '224 are substantially identical, the effect of the methods on the level of endogenous cinnamic compound in plant would have been reasonably expected to be identical.

7. Claims 2, 6, 8, 15, 25-28, 30-32, and 45 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6,251,951.

8. '951 claims a method of protecting plants, including bell pepper, against microbial pathogens, comprising contact the plant with a composition comprising cinnamic aldehyde. The composition may further comprise saponin and the contacting may be realized by spraying. See,

the claims. The claims in '951 differ from the claims herein only in scope. Specifically, Claims herein are generic to the claims in '951.

Claim Rejections 35 U.S.C. 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 2, 6, 15, 22, 24, 26, 31, 38, 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Soatome et al. (JP 57120501, IDS B8).

1. Soatome teaches a method of protection of crop from harmful insects, microorganism and pathogenic fungi comprising applying an emulsion of cinnamic aldehyde to the crop. See, the entire document. Note the composition does not require antioxidant. As to the limitation "sustained resistance" note the recitation has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Further, regarding the newly added limitation "whereby said sustained resistance is provided to said plant" note, the limitations are directed to a function with an old and well known compound. The argument that such claims are not directed to the old and well known ultimate

utility (applying the compound to crop.) for the compounds, e.g., cinnamic aldehyde, are not probative. It is well settled patent law that mode of action elucidation does not impart patentable moment to otherwise old and obvious subject matter. Applicant's attention is directed to In re Swinehart, (169 USPQ 226 at 229) where the Court of Customs and Patent Appeals stated "is elementary that the mere recitation of a newly discovered functionor property, inherently possessed by thing in the prior art, does not cause a claim drawn to those things to distinguish over the prior art."

Claim Rejections 35 U.S.C. – 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 2, 6, 8, 15, 22, 24-26, 28, 30-32, and 36, 38, 39, 41-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sotome (US 4,978,686, A1, IDS of Jan. 10, 2000)in view of, Tsuei et al. (US 5,589,194, of record), Yamashita (US 5,696,094) and Frear (IDS C5), in further view of Saotome (IDS B8).

13. Sotome teach a method of protecting plant from the attack of insect pests, microorganism (including fungi) and pathogenic microbes by spraying or administering (irrigating) thereon a non-toxic and stable composition comprising cinnamic aldehyde and an antioxidant in the form of emulsion or powder. See the abstract and column 2, lines 64-68, and the claims. Similar composition may also be administered to the plant through roots. See, particularly, column 1,

lines 46-57. Cinnamic aldehyde is particularly known against soil borne pathogens, such as nematodes, see, particularly, example 3 in columns 9-10. Stability of cinnamic aldehyde is desired for maintaining the bioactivity. See, column 2, lines 26-33.

14. Sotome does not teach expressly to employ beeswax microencapsulated cinnamic aldehyde in the composition, or without using antioxidant in the composition as herein claimed, or to employ surfactants, such as saponin, for the particularly plants herein claimed, or for the particularly plants herein.

However, Tsuei et al. teach that microencapsulation of bioactive agents, such as antimicrobial agent, with beeswax or carnuba wax is known to useful for controlled release or protection of the active agent from oxidation and other degradations. See, particularly, column 2, line 63 bridging column 3, lines 20, column 4, lines 8-15, column 4, line 53 bridging column 5, line 12. Yamashita teaches that nematodes are well-known soil-borne pathogens to many plants including tomato, grapes, etc. See, column 1, lines 16-42. Frear teaches that saponin is a well-known spray adjuvant. See, page 185, the last paragraph. Soatome teaches that antioxidant is not required in cinnamic aldehyde composition for protecting crop, therefore indicating the antioxidant in Sotome's composition is for protect the cinnamic aldehyde from oxidation.

Therefore, it would have been prima facie obvious to a person of ordinary skill in the art, at the time the claimed the invention was made, to further modify the method of Sotome or Soatome by employing beeswax microencapsulated cinnamic aldehyde to the composition, or further employ saponin in the composition, or to employ the claimed method to plants such as grape, tomato etc, without the employment of antioxidant.

A person of ordinary skill in the art would have been motivated to further modify the method of Sotome by employing beeswax microencapsulated cinnamic aldehyde to the composition because beeswax microencapsulation of the cinnamic compounds are known to be useful for protecting the compound from oxidation, or other premature reaction. The employment of saponin in the composition for spray is obvious because saponin is a well-known spray adjuvant. Employ the cinnamic containing composition to plants such as grape, tomato is obvious because the composition is known to be useful against the plants' microbial pathogens. Further, employment of antioxidant as suggested by Sotome would have not been necessary since microencapsulation would protect the active ingredients from oxidation. As to claim 45, which require a substituent, such as methyl, at the phenyl ring, note a methyl substituent at the phenyl ring would be a homolog of the cinnamic aldehyde. The instant compounds are structural homologs of the reference compounds when a homolog of the cinnamic aldehyde. a homolog of the cinnamic aldehyde, i.e., they differ only by a CH_2 group. One having ordinary skill in the art would have been motivated to prepare the instantly claimed compound because such structurally homologous compounds are expected to possess similar properties. It has been held that compounds that are structurally homologous to prior art compounds are prima facie obvious, absent a showing of unexpected results. In re Hass, 60 USPQ 544 (CCPA 1944); In re Henze, 85 USPQ 261 (CCPA 1950).

15. Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sotome (US 4,978,686, A1, IDS of Jan. 10, 2000) in view of Tsuei et al. (US 5,589,194, of record), Yamashita (US 5,696,094) and Frear (IDS C5), Soatome (IDS B8), and in further view of Winston (U.S. 5,415,877).

16. Claim 33 and 34 are obvious over the cited references for reasons as discussed above, and in further view of Winston.

17. Note previous cited references do not teach expressly the employment of sodium bicarbonate as agent against microbial pathogen. However, Winston teaches that salt such as sodium bicarbonate is a well-known fungicide ingredient. See, particularly, column 1, lines 34-37. It is prima facie obvious to combine two compositions each of which is taught in the prior art to be useful for same purpose in order to form third composition that is to be used for very the same purpose; idea of combining them flows logically from their having been individually taught in prior art; thus, the claimed invention which employs a combination of two known fungicides sets forth prima facie obvious subject matter. See In re Kerkhoven, 205 USPQ 1069.

18. Claims 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sotome (US 4,978,686, A1, IDS of Jan. 10, 2000) in view of Tsuei et al. (US 5,589,194, of record), Yamashita (US 5,696,094) and Frear (IDS C5), Soatome (IDS B8), in further view of Keen et al. (CAPLUS Abstract, AN 1979:471805).

19. Claims 35 and 37 are obvious over the cited references for reasons stated above, and in further view of Keen et al.

The previous cited references do not teach expressly the employment of the particular aldehyde herein. However, Keen et al. teaches that coniferyl aldehyde is known to be useful as antimicrobial agents, particularly for plant protection. See, the abstract. Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, to employ coniferyl aldehyde in Sotome' s method because coniferyl aldehyde is structurally similar to cinnamic aldehyde, and is known to be useful as antifungal agents.

Response to the Arguments

Applicants' amendments and remarks submitted July 20, 2004 have been fully considered, but are not persuasive to the rejections set forth above.

With respect to the rejections under 35 U.S.C. 102, as discussed above, a newly discovered function to an old and well-known compound or method would not make the compound, or method patentable.

2. As to the rejections of claims 2, 6, 8, 15, 22-32, 36, 39 and 41-44 under 35 U.S.C. 103, applicants argue the cited references fails to teach each and every limitations recited in the claims. Particularly, the cited references fails to teach "sustained resistance," "nonphytotoxic composition" and "free of antioxidants." The arguments are not persuasive. As to "sustained resistance," the examiner notes that the limitations are directed to a function with an old and well-known compound. The argument that such claims are not directed to the old and well known ultimate utility (applying the compound to crop.) for the compounds, e.g., cinnamic aldehyde, are not probative. It is well settled patent law that mode of action elucidation does not impart patentable moment to otherwise old and obvious subject matter. Applicant's attention is directed to In re Swinehart, (169 USPQ 226 at 229) where the Court of Customs and Patent Appeals stated "is elementary that the mere recitation of a newly discovered function or property, inherently possessed by thing in the prior art, does not cause a claim drawn to those things to distinguish over the prior art." Regarding "nonphytotoxic composition" the Examiner respectfully points out that a compound and its properties are inseparable. In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA 1963). Thus, while the cited reference may not explicitly state these properties, these properties are an inherent characteristic of cinnamic aldehyde

composition. Particularly, Sotome et al. clearly teach a cinnamic aldehyde composition herein for protection of plant. The said properties herein is deemed inherent. With respect to the limitation "free of antioxidant" it is noted that in view the cited references as whole, it would have been obvious to one of ordinary skill in the art that the employment of antioxidant would be not necessary. See the discussion in the rejection.

3. Applicants argue that Tseui et al. teach away from the claimed invention, citing col. 4, lines 7-14. Applicants assert that Tseui et al. teach microencapsulation of antioxidants and not microencapsulation as substituent for antioxidant. Applicants' assertion is in error. Initially, it would be helpful to clearly define what is "antioxidant" most of the "antioxidants" employed in the art are those compounds labile to oxidation. These compounds scavenge free radical, be oxidized, and thereby protect other compound from oxidation. Depending on the utility, one compound may be used as antioxidant, or as active ingredient which is in need of protection from oxidation. Tseui et al. clearly teaches the active component to be encapsulated may be any component that would benefit from controlled delivery or protection from premature reaction or adverse environmental effect. Col. 4, lines 7-14. Vitamin C and β-carotene are two of those compounds labile to oxidation. Therefore, vitamin C and β-carotene would be benefit from the capsulation. The cinnamic compounds herein employed are also known to be labile to oxidation. Therefore, it would have been obvious to employ the method of Tseui for protecting cinnamic compounds.

4. The rejections of claims 33-35 and 37 under 35 U.S.C. 103 have been maintained since a prima facie case has been established for reasons discussed above.

No claims are allowable.

Note claim 40, reciting the employment of a-hexyl cinnamic aldehyde would be allowable if the double patenting rejection is overcomed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shengjun Wang whose telephone number is (571) 272-0632. The examiner can normally be reached on Monday to Friday from 7:00 am to 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreeni Padmanabhan, can be reached on (571) 272-0629. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SHENGJUN WANG
PRIMARY EXAMINER

Shengjun Wang
Primary Examiner
Art Unit 1617